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SUBJECT: ABUNDANT COAL AND HYDRO-ELECTRIC POTENTIAL IN EASTERN INDIA

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¶1. (SBU) Summary: Eastern India offers immense potential for the development of the power sector due to abundant coal deposits and large hydro-electric potential. Public and private sector firms are focused primarily on increasing coal-based thermal power generation, despite the sensitivities and challenges of land acquisition. Geological, environmental and resettlement concerns have thus far limited hydro-electric installed capacity to a little more than seven percent of its potential in the northeast. State governments, particularly West Bengal and Bihar, are promoting renewable sources of energy as possible partial off-grid solutions for providing electricity to rural and remote areas. End Summary.

¶2. (U) In eastern India there are approximately 20,100 Megawatts (MW) of total installed power generation capacity in the states of West Bengal, Orissa, Bihar, Jharkhand, and Sikkim. Approximately 79 percent is derived from thermal powered plants (coal - 99 percent and natural gas - 1 percent) and 20 percent from hydro-electric with one percent from other renewable sources (mini and micro hydro-electric, solar and biomass). Nearly two-thirds of the country's coal reserves are in the eastern region, belying the producers' preference for thermal power. State-owned and federal entities are the primary power producers in the eastern region accounting for more than 92 percent of total on-grid electricity production capacity. Recently private independent power producers have begun operations either to sell their electricity into the grid or for captive consumption.

#### Eastern India - Net Energy Exporter

¶3. (U) According to the Central Electricity Authority, in the most recent financial year (April 2008 - March 2009) power generating units in the eastern states supplied roughly 79,400 million kilowatt hours (kwh) of electricity against a demand of 82,000 million kwh. However, by the end of this financial year this slight deficit of 4.6 percent is expected to turn into a net surplus of 2.4 percent confirming eastern India's position as a net exporter of electricity to the rest of the country. In the current financial year (April 2009 - March 2010) India is projected to have a net energy deficit of 9.3 percent or 78,400 kwh. In the current Five Year Plan (2007-12), the GoI has targeted adding approximately 3,100 MW of hydro power and 14,000 MW of thermal power in the eastern region.

#### Producers Rely on Thermal Power for Future Expansion

¶4. (U) In India coal remains the key fossil fuel for electricity production, owing to its abundant availability and relatively low cost. Both public and private sector firms plan to increase thermal production capacity. In the eastern region,

the Orissa state government has been very successful at attracting independent power producers (IPP) with 21 signed Memorandum of Understandings (MoU) representing approximately 25,000 MW, seven of which are already underway. Jharkhand has signed MoUs for 31,000 MW worth of projects and West Bengal plans to add approximately 3,300 MW by 2012.

#### Land Acquisition and Politics Slow MoU Conversion Rate

15. (SBU) Land acquisition and politics have slowed conversion of signed MoUs into realized projects in West Bengal and Jharkhand. According to CEA Eastern Regional Committee Head Mr. R K Grover, a 1,000 MW power plant requires approximately 1,000 acres of land - an average of 1 acre per MW. However, large plots of land are hard to find in West Bengal and land acquisition for industry is a very sensitive subject in the state. In the coal-rich state of Jharkhand, political instability - the state is currently without a state government and under centrally administered President's Rule - has further compounded the challenges of converting MoUs into completed projects.

#### Hydro-electric Potential in the (North) East

16. (U) India's northeast, a region abutting the Himalayas, is a treasure trove of hydro-electric potential. The remote border state of Arunachal Pradesh itself has more than 50,000 MW of hydroelectric potential. Sikkim, Orissa and West Bengal are other states with promising hydro-electric assets having the potential to generate 11,000 MW of power. Sikkim has awarded IPPs 26 contracts to develop approximately 4,300 MW of hydropower, five of which are already under construction. West Bengal recently indicated that it would like to explore hydro-electric projects in the neighboring mountain kingdom of Bhutan. Geological, environmental and resettlement concerns, not to mention the remote location increasing transmission

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costs, have thus far limited the development of hydro-electric resources in the region.

#### Renewables - Minor Players, Primarily Off-Grid

17. (SBU) West Bengal and Bihar have begun promoting renewable energy, primarily for off-grid electricity production. Driven by the dynamic Director of the state owned Green Energy Development Corporation Mr. S P Gon Chaudhuri, West Bengal has attracted investments worth USD 1.3 billion in solar photovoltaic manufacturing sector and has signed MoUs worth USD 84 million with eight renewable energy companies to generate 50 MW of solar and bio mass based energy by 2011-12. Chaudhuri credits West Bengal's favorable tariff scheme and its renewable energy policy that requires distribution companies to buy energy offered from private producers at premium prices for its success in attracting investment. (Power is a concurrent state/central subject where state electricity boards may independently set tariffs, although guidelines are provided by the center.) On the other hand Bihar has focused on biomass, particularly rice husk based biomass gasification, to increase renewable power generation in off-grid areas (only 6 percent of rural households have access to electricity). The Bihar state government has already identified a potential 200 MW of biomass based gasification projects.

#### Comment

18. (SBU) Coal is the dominant source of fuel for power generation in the eastern region and is expected to remain so in the near future. States like West Bengal, Sikkim, Arunachal Pradesh and Bihar are beginning to tap into other available natural resources (water, solar, biomass) to meet growing grid, or satisfy nascent off-grid demands. States are welcoming private players into the industry both for their financial capital and technical expertise in order to meet the growing demand for energy. An increased public awareness of climate change and (greenhouse gas emissions), and international debate

regarding future conventions, are promising signals for the small, but growing, renewable energy sector in India.

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